

## CLAIMS

1. An electrophoresis module having an electrophoresis bath with upright carriers, said module has an upright cassette provided on a right and a left end thereof with a clamping assembly each; said clamping assembly is composed of at least  
5 a clip and a rotating knob for moving said clip; wherein said clip has a plurality of guide slots facing in a direction parallel to that of clamping of sets of said carriers for slipping of a plurality of protrusions provided correspondingly  
10 on said cassette in said guide slots, and has a bevel slit linked with said rotating knob, said rotating knob has a pusher rod insertable into said bevel slit, when in rotating said rotating knob, said pusher rod and said bevel slit push and guide to press said carrier sets toward said cassette.

15 2. The electrophoresis module having an electrophoresis bath with upright carriers as in claim 1, wherein:  
said clamping assembly has said clip both at a front and a rear said of said cassette.

3. The electrophoresis module having an electrophoresis  
20 bath with upright carriers as in claim 2, wherein:  
said cassette has a recess opened upwardly both on said front and rear sides thereof, said recess has on a peripheral edge thereof a buffering member.

4. The electrophoresis module having an electrophoresis  
25 bath with upright carriers as in claim 1, wherein:

a top of said cassette has on each end thereof a connecting electrode; said connecting electrodes have between them conductors extending to a bottom of said cassette, said cassette clamping therein said carrier sets is placed in an electrophoresis bath, said connecting electrodes on said top of  
5 said cassette are connected with a power line to proceed with an electrophoresis separation engineering.

5. The electrophoresis module having an electrophoresis bath with upright carriers as in claim 1, wherein:  
10 said cassette is provided therein with a tortuous passage, two ends of said tortuous passage are provided with connecting pipes to connect respectively with a water inlet and a water outlet, so that cooling water gets in and out of said cassette to cool working temperature of an electric conducting device in  
15 said electrophoresis bath.

6. The electrophoresis module having an electrophoresis bath with upright carriers as in claim 1, wherein:  
said cassette has on a bottom thereof a construction that has two lateral sides thereof tilted down toward a middle area  
20 thereof, this creates an action to accelerate raising of bubbles in order to prevent said bubbles generated by electric connecting of a kind of buffering liquid from attaching to surfaces of said cassette or said carrier sets.

7. The electrophoresis module having an electrophoresis  
25 bath with upright carriers as in claim 1, wherein:

said electrophoresis module is provided with a rack, said rack has a bottom board for placing said cassette, said bottom board is provided thereon with upright walls to frame correspondingly said cassette; said bottom board further has protruding portions being on areas corresponding with two lateral side parts of said cassette and extending over a top of said cassette, said protruding portions have axle holes in favor of extending of cam axles between said axle holes of every two mutually opposite ones of said protruding portions; said cam axles each has cams to contact tops of said carrier sets; and said bottom board has elastic pads at locations corresponding with bottom edges of said carrier sets; when said carrier sets are clamped on said cassette, said cassette is placed in said rack together with said carrier sets, and said cam axles then are extended between corresponding ones of said axle holes of said rack and on said tops of said cassette; rotating said cam axles makes said cams press said tops of said carrier sets, and said cassette is entirely pressed together with said carrier sets toward said elastic pads to have said bottom edges of said carrier sets sealed by pushing action of said elastic pads, and said carrier sets are flush with said top of said cassette in order that pouring and sealing operation of sample solution and gel is performed.

8. The electrophoresis module having an electrophoresis bath with upright carriers as in claim 7, wherein:

said bottom board of said rack is provided with holes for insertion of said cam axles.

9. The electrophoresis module having an electrophoresis bath with upright carriers as in claim 7, wherein:

5       said upright walls of said rack is provided on an inner wall thereof with positioning strips for guiding positioning of said cassette.

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